

Ontology Translation Protocol (Ontrapro)

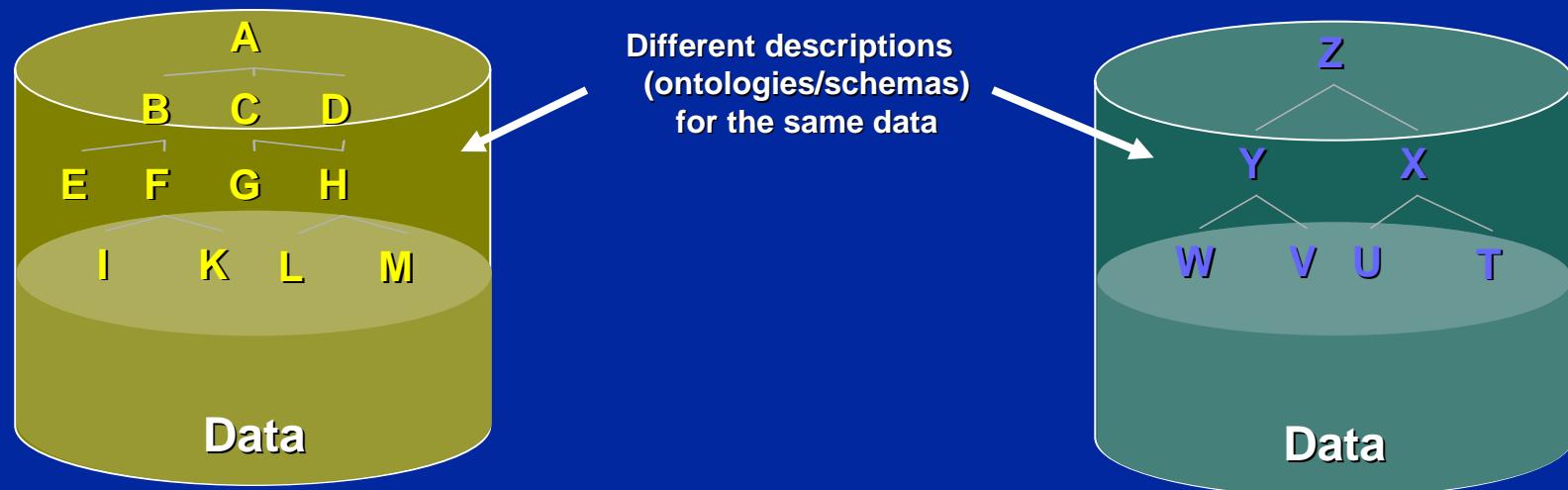
Automated Ontology Alignment



Ben Ashpole
Member, Engineering Staff
Advanced Technology Laboratories

Ontrapro

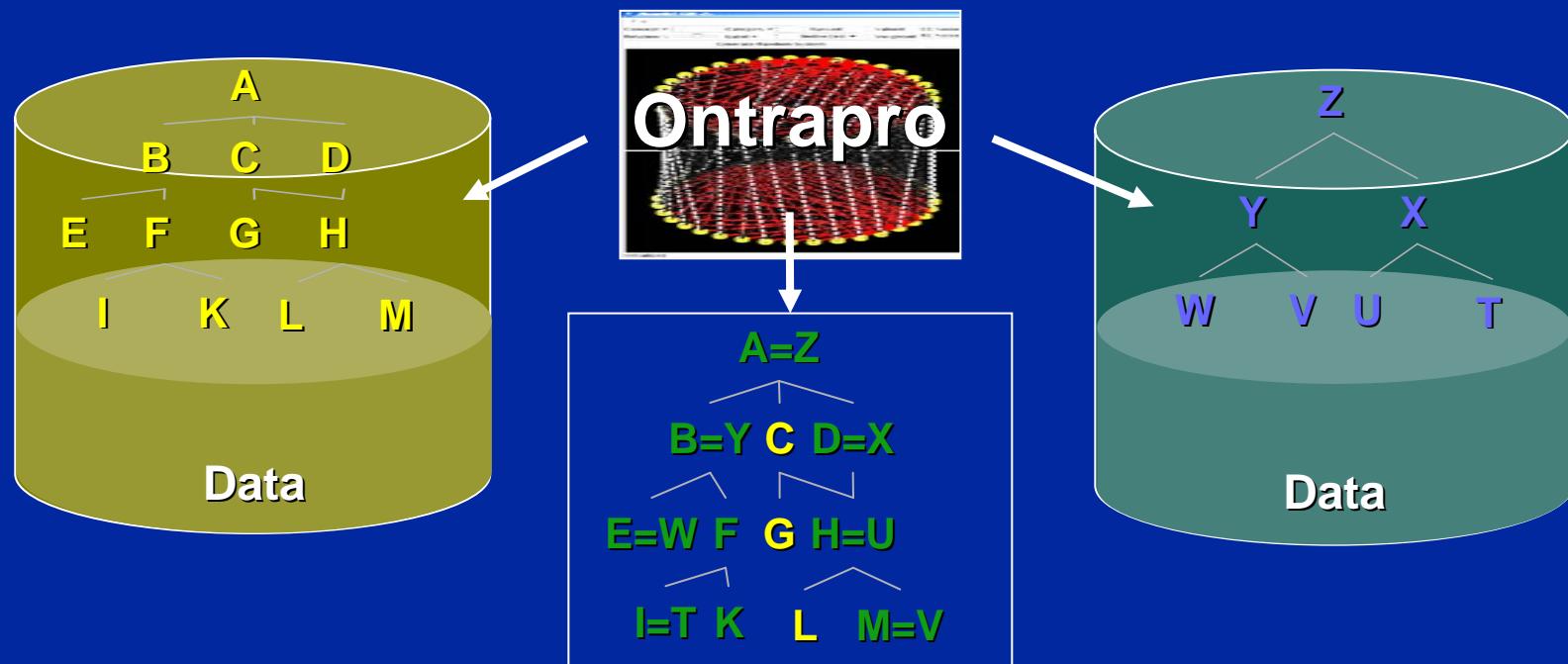
- Semantic integration is needed when different information systems have different formal descriptions of the same type of data
- E.g., Inter-agency intelligence data sharing, joint sensor surveillance, multinational command and control
- Semantic Integration is also a key challenge of the Semantic Web



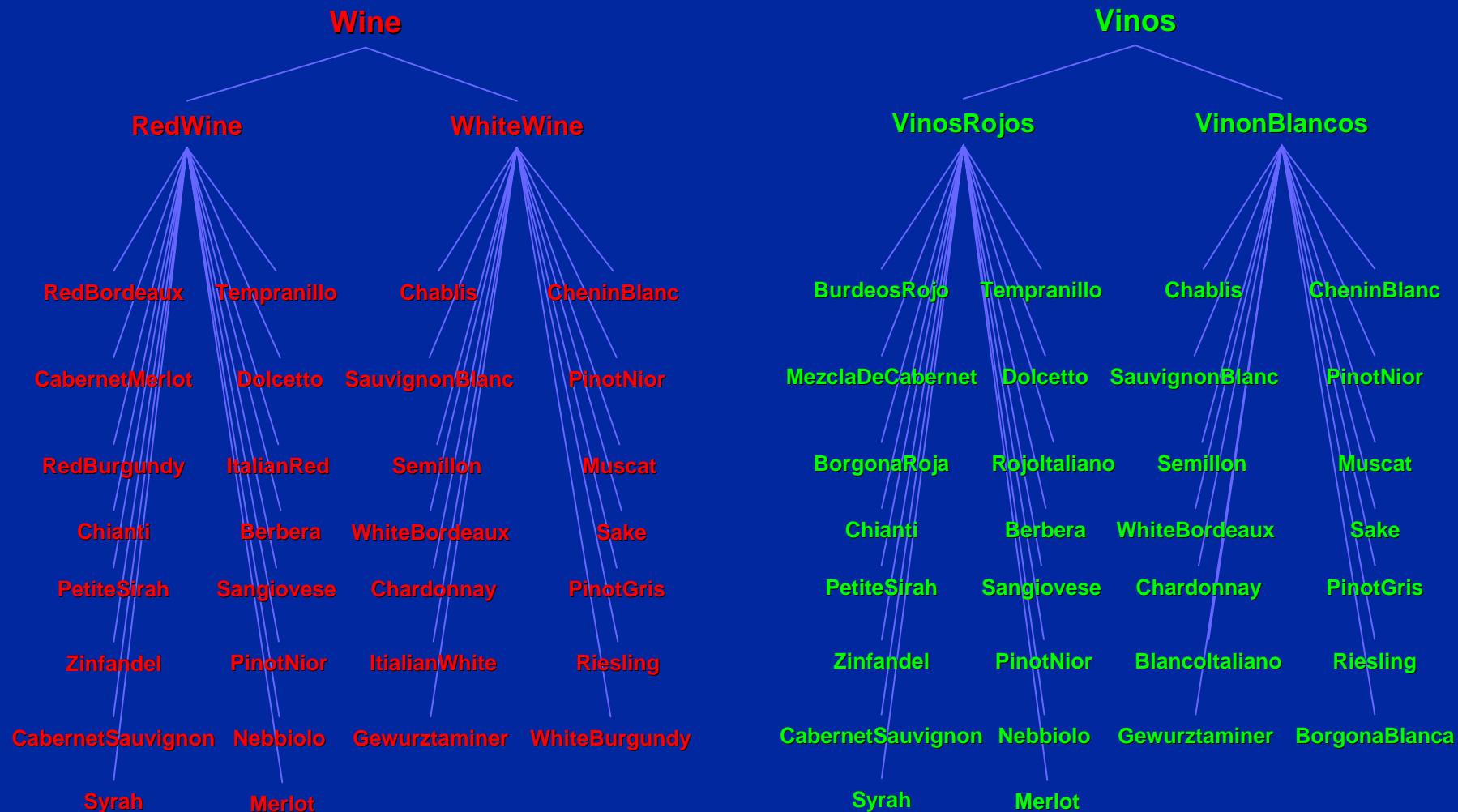
Ontrapro



- Our approach is to develop and/or integrate a suite of best-of-breed aligner algorithms
 - Ontrapro seeks to automate the process of aligning the data descriptions of *fielded* information resources
 - Ontrapro discovers semantic correspondences between the elements of ontologies and schemas

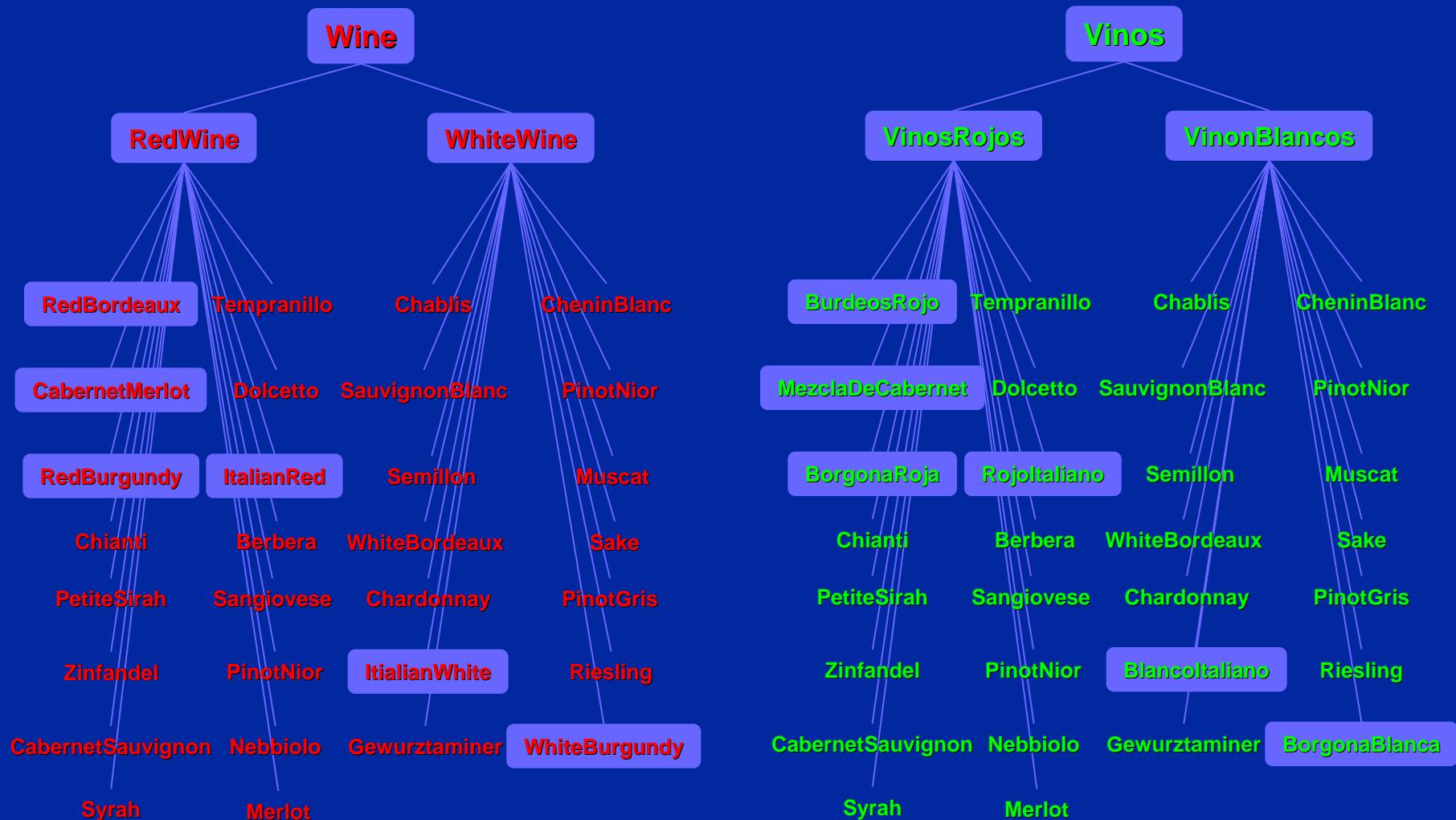


Example: Wine Ontologies



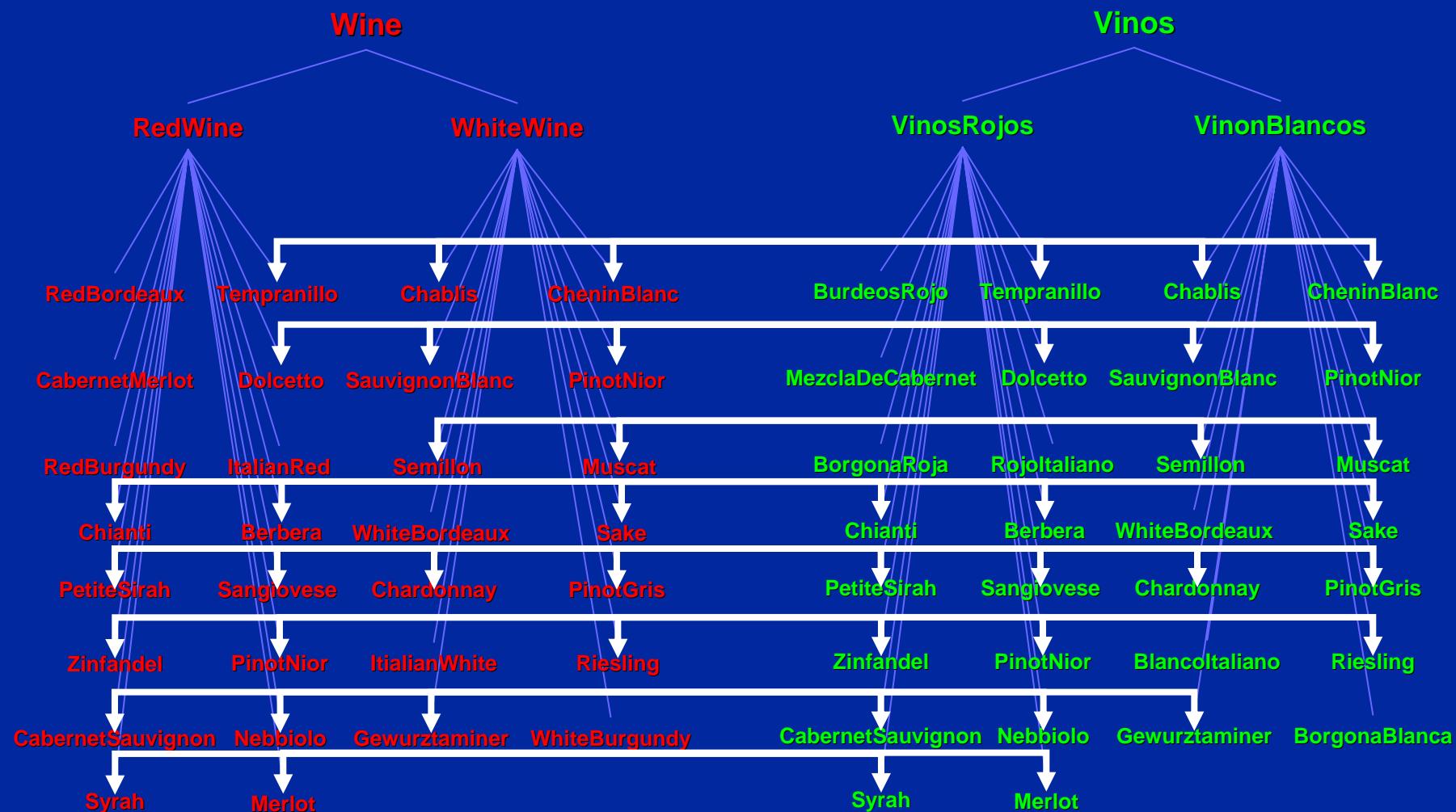
Example: Wine Ontologies

Term Dissimilarities

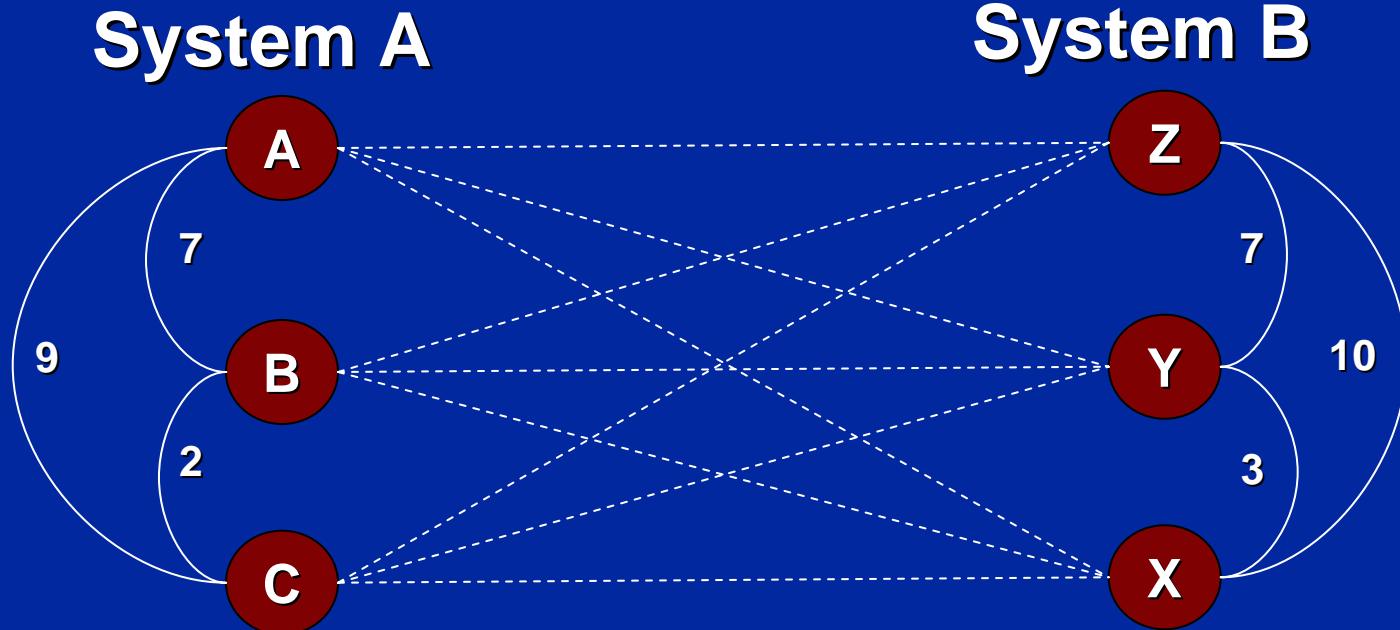


Example: Wine Ontologies

Edit Distance Mapping

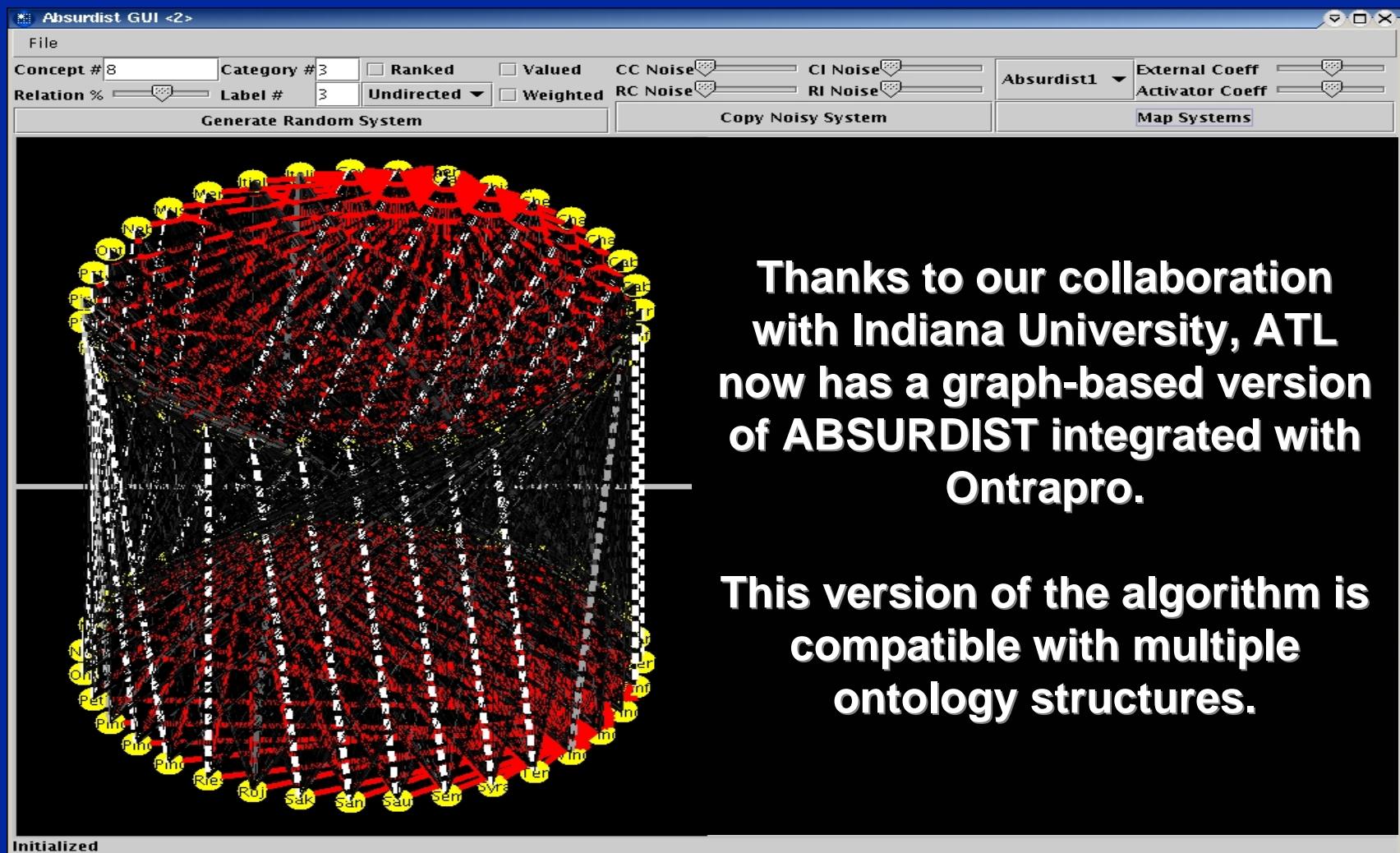


Example: Wine Ontologies Structure Mapping

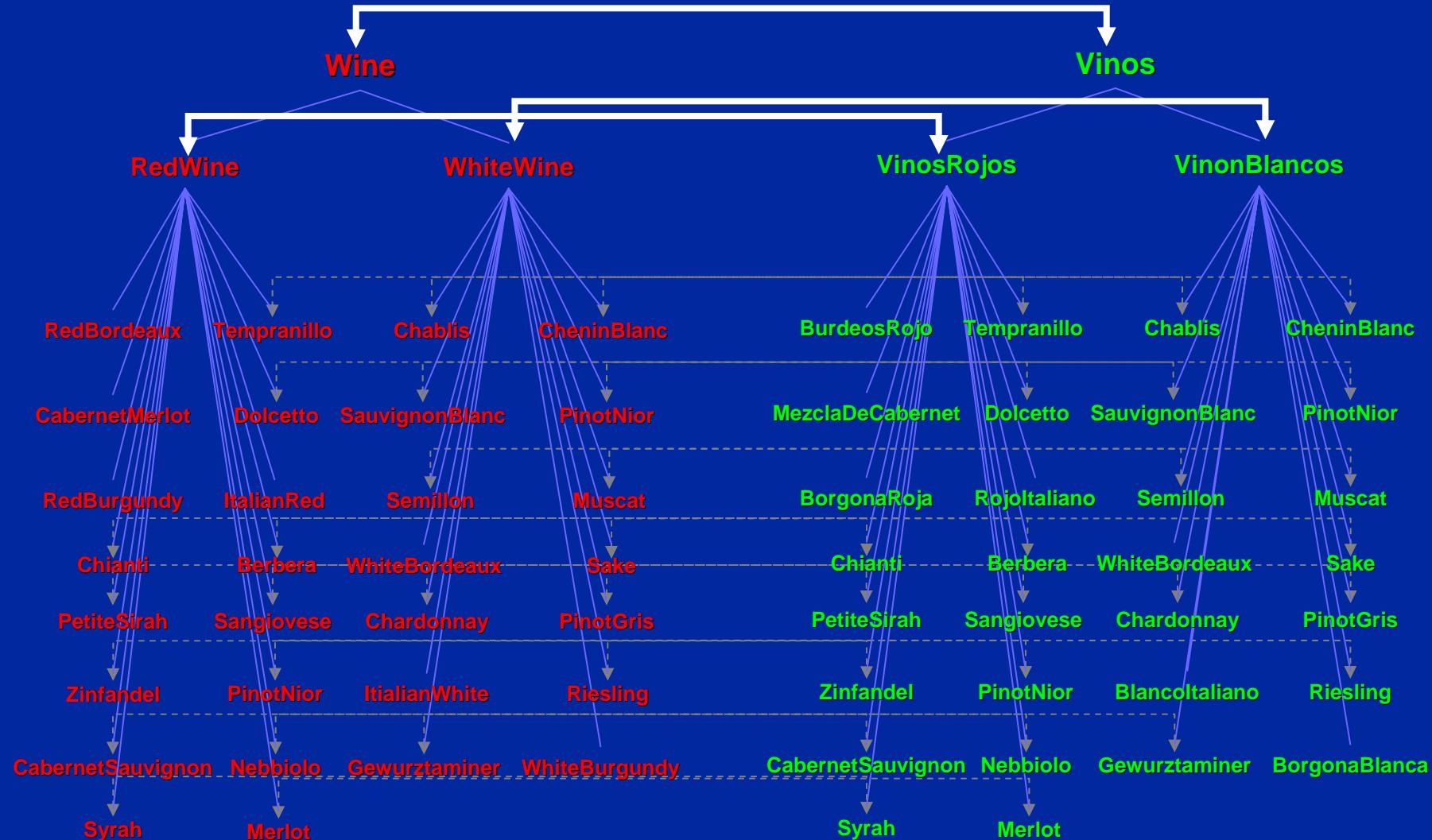


Original ABSURDIST (Aligning Between Systems Using Relations Derived Inside Systems for Translation)
algorithm generates a list of term correspondences by iterating through similarity distances between systems.

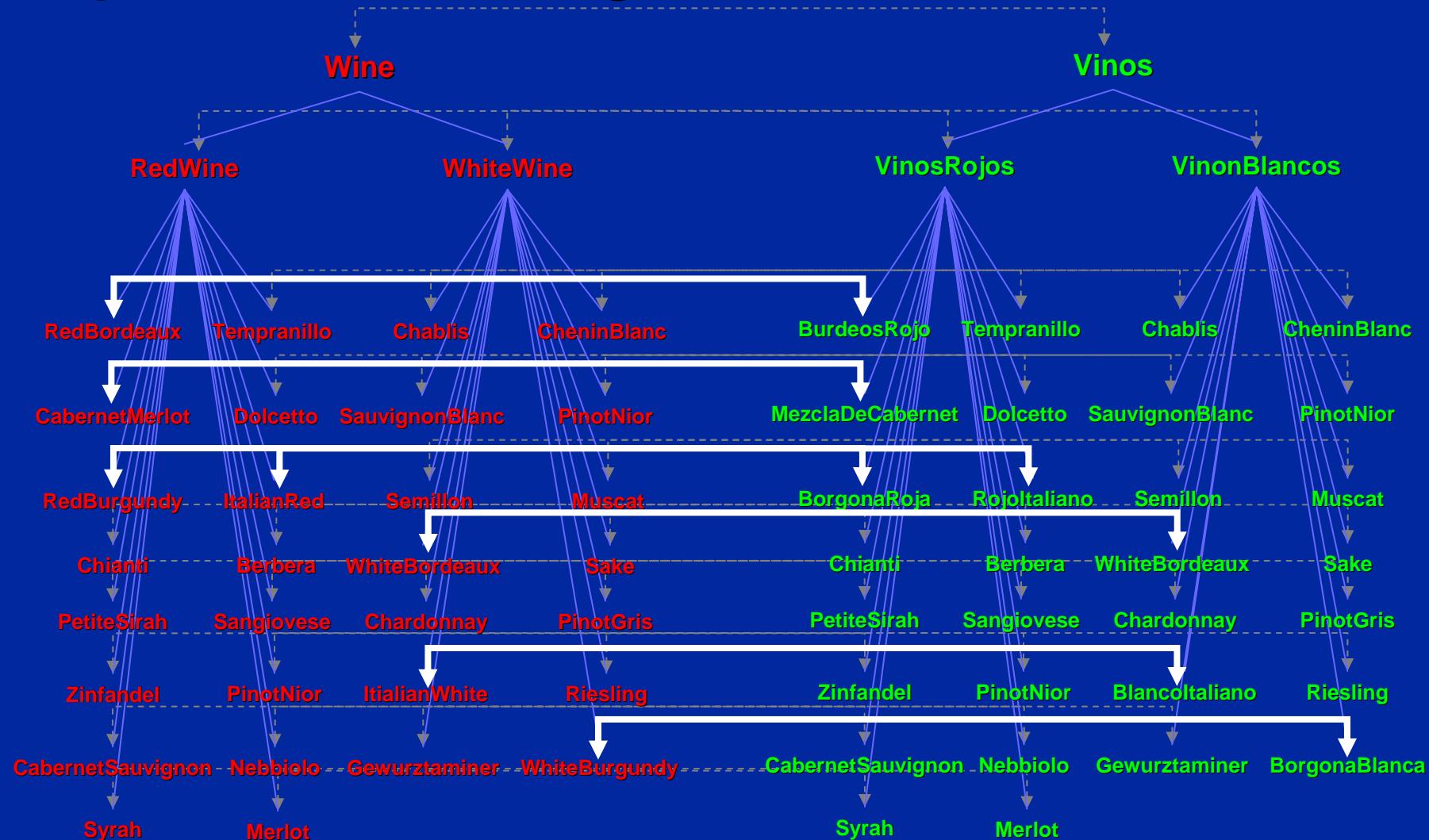
Example: Wine Ontologies Structure Mapping



Example: Wine Ontologies ...plus structure mapping

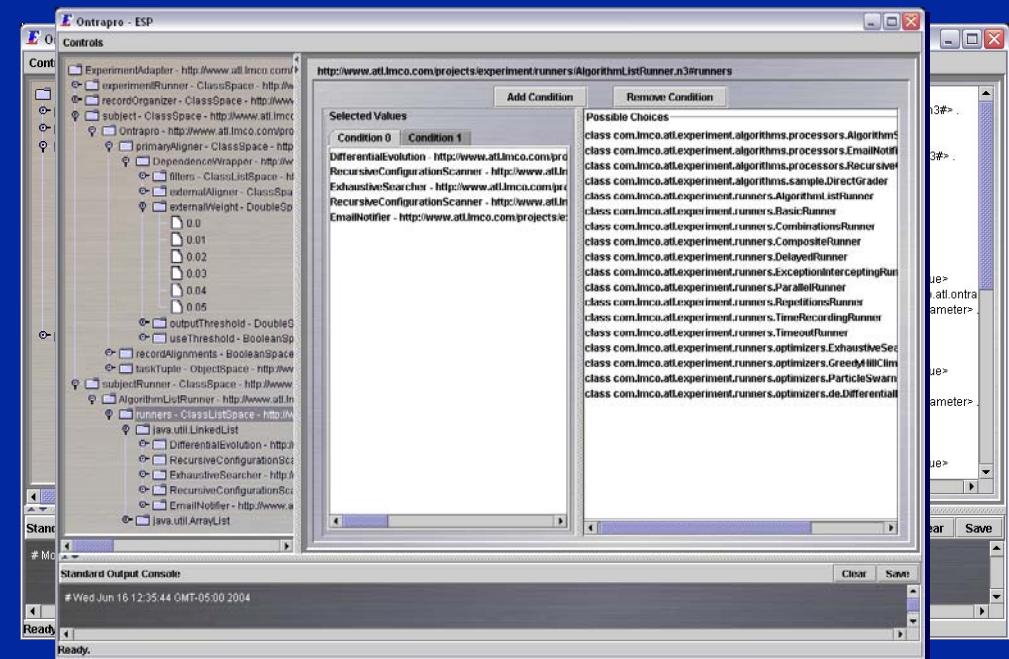


Example: Wine Ontologies ...plus stable marriage



Experiment Set Platform

- ATL has developed a platform for
 - Semi-automating experiment setup
 - Automating experiment execution
 - Automating data collection
 - *Used to grade alignments*
- Employs a core set of ontologies
 - General Experiment
 - Ontology Alignment
 - Alignment Evaluation
 - Ontology Operation
 - Operation Evaluation



<http://cvs.sourceforge.net/viewcvs.py/ontology/>

Ontrapro Software and Tools



- Developed for Ontrapro
 - ABSURDIST
 - Various aligners and filters
 - Experiment tools
 - E.g., AlignmentGrader, CombinationsRunner
 - Query tools
 - Integration framework
- Adopted for Ontrapro
 - Jena
 - Similarity Flooding
 - TreeJuxtaposer
 - KavaChart
 - IsaViz



Ontology Alignment Source

<http://www.atl.external.lmco.com/projects/ontology>

